**ANESTAR SCHOOLS JOINT EXAM**

**CHEMISTRY FORM 3**

**END OF TERM 2**

**NAME………………………………………………..ADM…………DATE…………**

1. You are provided with:

- Metal carbonate, MCO3, solid Q

- 2M hydrochloric acid, solution P

- Sodium hydroxide, solution R containing 40g per litre of solution.

You are required to determine the relative atomic mass of metal M.

**Procedure**

Measure accurately 100cm3 of solution P into a clean 250cm3 conical flask and add all the 4.69g of solid Q. MCO3. Shake well and wait for effervescence to stop. Label the resulting solution as S1. Pipette 25cm3 of solution R into a conical flask and add 2 – 3 drops of phenolphthalein indicator. Fill a burette with solution S1 and titrate against the solution R until the end point. Record your results in the table below. Repeat the procedure to fill the table.

**Table 1**

|  |  |  |  |
| --- | --- | --- | --- |
|  | I | II | III |
| Final burette reading (cm3) |  |  |  |
| Initial burette reading (cm3) |  |  |  |
| Volume of solution S1, used cm3 |  |  |  |

Calculate (4mks)

(i) Average volume of solution S1 used (1mk)

(ii) Moles of sodium hydroxide, solution R used.(Na=23,O=16,H=1) (3mks)

(iii) Moles of hydrochloric acid, solution S1 in the average volume used. (2mks)

(iv) Moles of hydrochloric acid, solution S1 in 100cm3 of solution.` (2mks)

(v) Moles of hydrochloric acid in the 100cm3 of the original solution P. (2mks)

(vi) Moles of hydrochloric acid, solution P, that reacted with solid Q, MCO3. (2mks)

(vii) Moles of MCO3 that reacted (2mks)

(viii) The relative formula mass of MCO3. (2mks)

1. You are provided with solid Z. Carry out tests below. Record your observations and inferences in the spaces provided.
   1. Place solid Z in a test tube add about 10cm3 of distilled water and shake to dissolve. Divide the resultant solution into 6 portions and use them for tests below

|  |  |
| --- | --- |
| **Observations** (1mk) | **Inferences** (1mk) |

(i)To the first portion add dilute sodium hydroxide drop wise until in excess

|  |  |
| --- | --- |
| **Observations** (1mk) | **Inferences** (1mk) |

(ii)To the second portion add aqueous ammonia drop wise until in excess

|  |  |
| --- | --- |
| **Observations** (1mk) | **Inferences** (1mk) |

(iii)To the third portion add a few drops of dilute hydrochloric acid and warm to almost boiling

|  |  |
| --- | --- |
| **Observations** (1mk) | **Inferences** (1mk) |

(iv)To the fourth portion add a few drops of barium chloride solution

|  |  |
| --- | --- |
| **Observations** (1mk) | **Inferences** (1mk) |

1. To the fifth portion add drops of potassium iodide solution until in excess

|  |  |
| --- | --- |
| **Observations** (1mk) | **Inferences** (1mk) |

(vi)To the sixth portion add a few drops of sodium sulphate solution

|  |  |
| --- | --- |
| **Observations** (1mk) | **Inferences** (1mk) |

3. You are provided with a liquid K. You are to carry out the tests below and record you observations and inferences in the spaces provided.

(i) Dip a clean glass-rod into liquid K and ignite.

|  |  |
| --- | --- |
| Observations | Inferences |
| ( 1mk) | ( 1mk) |

(ii) To about 3ml. of liquid K in a test tube add equal amount of distilled water and shake the mixture.

|  |  |
| --- | --- |
| Observations | Inferences |
| 1mk) | 1mk) |

iii) To about 5ml of liquid K in a test tube add 2drops of acidified potassium manganate (VII) solution and warm

|  |  |
| --- | --- |
| Observations | Inferences |
| (1mk) | 1mk) |